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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/770,400	01/29/2001	Takayoshi Sasaki	202337US0	6177

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EXAMINER

AHMED, SHEEBA

ART UNIT	PAPER NUMBER
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1773

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DATE MAILED: 08/26/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/770,400

Applicant(s)

SASAKI ET AL.

Examiner

Sheeba Ahmed

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☐ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) 5 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_ 6) ☐ Other: \_\_\_\_.

**DETAILED ACTION**

***Election/Restrictions***

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
  - I. Claims 1-4, drawn to a multilayer structure, classified in class 428, subclass 411.1+.
  - II. Claim 5, drawn to a method of making a multilayer structure, classified in class 427, subclass 407.1+.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case, the product can be made by a different process. For example, the polymer layers and titanium oxide layers could be layered by adhesively bonding one to the other instead of by alternately soaking a substrate in a titania sol and a cationic polymer solution.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

During a telephone conversation with Tom Barnes on August 19, 2002, a provisional election was made with traverse to prosecute the invention of Group I, claims 1-4. Affirmation of this election must be made by applicant in replying to this

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Office action. Claim 5 is withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oishi et al. (US 5,935,717).

Oishi et al. disclose a functional film (***corresponding to the multilayer ultrathin film of the claimed invention***) produced by forming an inorganic thin film on an organic film wherein the inorganic thin film may have an antistatic function, a photocatalytic function, and/or a light reflectance changing function (Column 1, lines 7-10). Dispersed particles of titanium oxide may be used to form the inorganic thin film (***corresponding to the layer of lamina particles of the claimed invention and meeting the limitations of claims 2***) wherein the particles have a particle size of 500

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angstroms or less (Column 5, lines 6-44). The organic film may be polyethylene terephthalate (**corresponding to the polymer layer of the claimed invention**) (Column 6, lines 13-16). To produce a film capable of exhibiting a photofunction such as an antireflection film, multiple inorganic films may be formed on the surface of the organic film (Column 3, lines 57-61). Embodiment 1 indicates that the thickness of the inorganic thin film may be 800 to 1000 angstroms (**thus meeting the limitations of claim 3**). Oishi et al. do not specifically state that their functional film comprises alternating layers of the polymer and the titanium oxide particles. However, it would have been obvious to use multiple alternating layers of the polymer and the titanium oxide to obtain a specific amount of photofunction such as antireflection particularly given that Oishi et al. teach that multiple inorganic layers may be used to produce a film capable of exhibiting a photofunction such as an antireflection. With regards to the limitations of claim 4, the Examiner takes the position that the film disclosed by Oishi et al. must inherently absorb UV light having a wavelength of at most 300 nm given that the chemical composition of the polymer layer and the lamina layer as disclosed by Oishi et al. is identical to that of the claimed thin film.

3. Claims 1, 2, and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Endo et al. (US 5,665,422).

Endo et al. disclose an antireflection film (**corresponding to the multilayer ultrathin film of the claimed invention**) comprising an ultrafine particle film formed on the surface of a substrate (Column 4, lines 56-60). The ultrafine particles may be

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titanium oxide (**corresponding to the layer of lamina particles of the claimed invention and meeting the limitations of claims 2**) having a particle size of 10nm or less and the substrate may be a plastic such as polyethylene, polypropylene or polycarbonate (**corresponding to the polymer layer of the claimed invention**) (Column 6, lines 9-38 and Column 9, lines 24-30). Endo et al. do not specifically state that their functional film comprises alternating layers of the polymer and the titanium oxide particles. However, it would have been obvious to use multiple alternating layers of the polymer and the titanium oxide to obtain a specific amount of photofunction such as antireflection particularly given that multiple inorganic layers may be used to produce a film capable of exhibiting a photofunction such as an antireflection. With regards to the limitations of claim 4, the Examiner takes the position that the film disclosed by Endo et al. must inherently absorb UV light having a wavelength of at most 300 nm given that the chemical composition of the polymer layer and the lamina layer as disclosed by Endo et al. is identical to that of the claimed thin film.

4. Claims 1, 2, and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogata (US 6,113,861).

Ogata discloses a photocatalytic sheet (**corresponding to the multilayer ultrathin film of the claimed invention**) which has a base made of a polymeric organic compound and a photocatalytic semiconductor layer formed thereon. The base may be a film made of a synthetic resin (**corresponding to the polymer layer of the claimed invention**) and the photocatalytic semiconductor layer comprises titanium oxide

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particles (*corresponding to the layer of lamina particles of the claim d invention and meeting the limitations of claims 2*) which absorb ultraviolet radiation with a wavelength of 50 to 400 nm (*thus meeting the limitations of claim 4*) (Column 2, lines 28-51). Ogata does not specifically state that their photocatalytic sheet comprises alternating layers of the polymer and the titanium oxide particles. However, it would have been obvious to use multiple alternating layers of the polymer and the titanium oxide to obtain a specific amount of photofunction such as antireflection particularly given that multiple inorganic layers may be used to produce a film capable of exhibiting a photofunction such as an antireflection.

### **Conclusion**

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sheeba Ahmed whose telephone number is (703)305-0594. The examiner can normally be reached on Mon-Fri 8am-4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Thibodeau can be reached on (703)308-2367. The fax phone numbers for the organization where this application or proceeding is assigned are (703)305-5408 for regular communications and (703)305-3599 for After Final communications.



Sheeba Ahmed  
August 20, 2002



Paul Thibodeau  
Supervisory Patent Examiner  
Technology Center 1700